

REMARKS

Applicant thanks the Examiner for the telephonic interview with the inventor, Neal S. Bergano, and the undersigned attorney conducted on September 23, 2008. Applicant submits the present amendment for purposes of formally presenting the proposed amendment, which, as discussed in during the interview and acknowledged in the Interview Summary Record dated September 26, 2008, overcomes the present rejections. Reconsideration and allowance of the subject application, as amended, are respectfully requested.

Claim Amendments

Independent claims 1, 56 and 74 have been amended to recite that the claimed periodic modulation is applied “at the data modulation frequency.” This recitation appeared originally in dependent claims 12, 66, and 84 which have been cancelled without prejudice. No new matter has been added. Since the independent claims have been amended to include recitations of originally filed dependent claims, Applicant respectfully submits that no new search should be required.

35 U.S.C. §103

Claims 1, 3, 5-7, 9-13, 16-18, 56, 58, 60-62 and 64-66 were rejected under 35 U.S.C. §103(a) as being unpatentable over Sano et al. (A. Sano, Y. Miyamoto, T. Kataoka, H. Kawakami and K. Hagimoto, “10/Gbit/s, 300km repeaterless transmission with SBS suppression by the use of the RZ format”, Electron. Lett. Vol. 30, 1994, pages 1694-1695, hereinafter “Sano”) combined with Hickey et al. (M. Hickey and L. Kasovsky, “The STARNET coherent WDM computer communication network: experimental transceiver employing a novel modulation format”, Journal of Lightwave Technology, Volume 12, May 1994, Page(s): 876-884, hereinafter “Hickey”).

The Official Action correctly acknowledges that Sano “does not specifically disclose that the system comprising (sic) an amplitude adjustment mechanism configured for selectively adjusting a depth of said periodic modulation of the intensity of said optical signal.” *Official Action dated July 15, 2008 ¶ 2, page-3*. It is argued, however, that “Hickey discloses to

selectively adjust a depth of a periodic modulation of the intensity of an optical signal (figs 2, 4, and 7). *Id.* Applicant respectfully traverses this rejection.

Independent claim 1, as amended, recites

1. An apparatus for transmitting an optical signal comprising:
an optical signal source configured to generate an optical signal;
a data modulator coupled to said optical signal source and configured to modulate data on said optical signal at a data modulation frequency; and
an amplitude modulator coupled to said optical signal source and configured to provide a periodic modulation of the intensity of said optical signal ***at said data modulation frequency***; and
an amplitude adjustment mechanism configured for selectively adjusting a depth of said periodic modulation of the intensity of said optical signal.

Independent claim 56, as amended, recites:

56. A method of modulating an optical signal for transmission on an optical communication system, said method comprising:
modulating data on said optical signal at a data modulation frequency; and
imparting a periodic amplitude modulation on said optical ***signal at said data modulation frequency***; and
selectively adjusting a depth of said periodic amplitude modulation.

As discussed during the interview of September 23, 2008, Hickey teaches a system wherein two different data streams are modulated onto the same optical carrier at two different data rates. *See e.g., Page 877, left column, section II, ¶ 1 and FIG. 2a.* In particular, a 125 Mb/s ASK data stream is modulated onto the carrier along with a 2.488 Gb/s PSK data stream. *Id.* Again, there is nothing in Hickey that teaches or suggests to adjust the depth of a ***periodic modulation imparted on a data modulated signal at the data modulation frequency***, as recited independent claims 1 and 56. Hickey involves signals at ***two different data rates***, and ***neither is periodic*** (i.e. both are modulated according to the data stream which is understood to be non-periodic).

Clearly, therefore, the combination of references fails to teach or suggest all the limitations of independent claims 1 and 56. There is no combination of these references that one

could make to achieve the claimed invention. The claimed invention could not, therefore, have been obvious from the cited references at the time it was made.

For at least the foregoing reason, Applicant respectfully submits that independent claims 1 and 56 could not have been obvious over Sano combined with Hickey at the time the invention was made. Claims 12 and 66 have been cancelled without prejudice. Claims 3, 5-7, 9, 10, 11, 13, 16-18, 58, 60-62 and 64-65 depend, either directly or ultimately, from claims 1 or 56, and are allowable over the cited references by virtue of their dependency, as well as for their own recitations. Applicant respectfully requests, therefore, that the rejection of claims 1, 3, 5-7, 9-13, 16-18, 56, 58, 60-62 and 64-66 under 35 U.S.C. §103(a) as being unpatentable over Sano combined with Hickey be withdrawn upon reconsideration.

Claims 14-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sano in view of Hickey, and in further view of Applicants admitted prior art. Claims 14-15 depend from claim 1, and are allowable over the cited references by virtue of their dependency, as well as for their own recitations. Applicant respectfully requests, therefore, that the rejection of claims 14-15 under 35 U.S.C. §103(a) as being unpatentable over Sano combined with Hickey and Applicant's admitted prior art be withdrawn upon reconsideration.

Claims 2, 4, 37-45, 57, 59, 74-86 and 88-99 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sano in view of Hickey and Meissner et al. (U.S. Patent No. 5,060,311, hereinafter "Meissner"). Applicant respectfully traverses this rejection.

Independent claim 74, as amended, recites:

74. A transmission system comprising:
a transmitter including:
an optical signal source configured to generate an optical signal,
a data modulator coupled to said optical signal source and
configured to modulate data on said optical signal at a data modulation
frequency, and
an amplitude modulator coupled to said optical signal source and
configured to provide a periodic modulation of the intensity of said optical
signal ***at said data modulation frequency***;
an amplitude adjustment mechanism configured for selectively
adjusting a depth of said periodic modulation of the intensity of said
optical signal;

an optical transmission path coupled to said transmitter; and
a receiver coupled to the optical transmission path.

As discussed above, there is nothing in any of the cited references that teaches or suggest to adjust the depth of a *periodic modulation imparted on a data modulated signal at the data modulation frequency*, as recited in independent claim 74. Meissner does not provide the missing teachings, and is not cited as providing the missing teachings. Accordingly, for at least the reasons adduced above relative to claims 1 and 56, claim 74 could not have been obvious at the time it was made in view of Sano combined with Hickey and Meissner. Claim 84 has been cancelled without prejudice. Claims 2, 4, 37-45, 57, 59, 75-83, 85, 86 and 88-89 depend either directly or ultimately, from claims 1, 56 or 74, and are allowable over the cited references by virtue of their dependency, as well as for their own recitations. Applicant respectfully requests, therefore, that the rejection of claims 2, 4, 37-45, 57, 59, 74-86 and 88-99 under 35 U.S.C. §103(a) as being unpatentable over Sano combined with Hickey and Meissner be withdrawn upon reconsideration.

Claims 20, 22-27 and 69-72 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sano in view of Hickey and Kitajima et al. (U.S. Patent No. 5,515,196, hereinafter "Kitajima"). Claims 20, 22-27 and 69-72 depend from either claim 1 or 56, and are allowable over the cited references by virtue of their dependency, as well as for their own recitations. Applicant respectfully requests, therefore, that the rejection of claims 20, 22-27 and 69-72 under 35 U.S.C. §103(a) as being unpatentable over Sano combined with Hickey and Kitajima be withdrawn upon reconsideration.

Claims 46-50 and 90-98 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sano in view of Hickey, Meissner and Kitajima. Claims 46-50 and 90-98 depend from claims 1, 56 or 74, and are allowable over the cited references by virtue of their dependency, as well as for their own recitations. Applicant respectfully requests, therefore, that the rejection of claims 46-50 and 90-98 under 35 U.S.C. §103(a) as being unpatentable over Sano combined with Hickey, Meissner and Kitajima be withdrawn upon reconsideration.

AMENDMENT

Serial Number: 10/780,830

Filing Date: February 18, 2004

Title: Synchronous Amplitude Modulation for Improved Performance of Optical Transmission Systems

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Docket: TCM137C3

Claims 21 and 68 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Sano in view of Hickey, Kitajima and Takayama et al. (K. Takayama et al., "An all-optical 10-GHz LD-based clock regenerator using a Mach-Zehnder interferometer-type NRZ-RZ converter", Tech digest of ECOC '91, vol. MoC1-2, pp. 77-80, September 1991, hereinafter "Takayama"). Claims 21 and 68 depend from claims 1 and 56, respectively, and are allowable over the cited references by virtue of their dependency, as well as for their own recitations. Applicant respectfully requests, therefore, that the rejection of claims 21 and 68 under 35 U.S.C. § 103(a) as being unpatentable over Sano combined with Hickey, Kitajima and Takayama be withdrawn upon reconsideration.

Having dealt with all the objections raised by the Examiner, it is respectfully submitted that the present application, as amended, is in condition for allowance. Thus, early allowance is earnestly solicited.

If the Examiner desires personal contact for further disposition of this case, the Examiner is invited to call the undersigned Attorney at 603.668.6560.

In the event there are any fees due, please charge them to our Deposit Account No. 50-2121.

Respectfully submitted,

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